

ATTORNEY DOCKET NO.: C. LEE 22-1

PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Chin-Hui Lee, *et al.*

Serial No.: 09/325,143

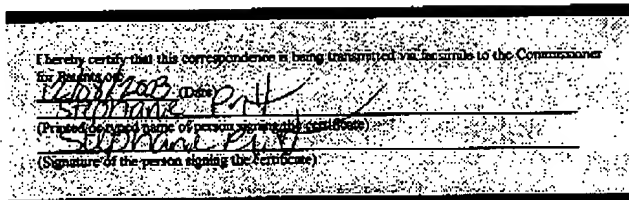
Filed: June 3, 1999

For: KEY SEGMENT SPOTTING IN VOICE MESSAGES

Grp./A.U.: 2645

Examiner: Gerald Gauthier

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450



Sir:

AFFIDAVIT UNDER 37 C.F.R. §1.131

I, Chin-Hui Lee, hereby state:

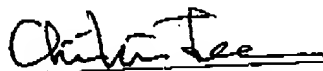
1. I am an inventor of the claimed subject matter in the Patent Application identified above and an inventor of the subject matter described therein..
2. Prior to April 16, 1999, my co-inventor and I participated in the conception of spotting key segments in voice messages, as covered by the above-identified Patent Application, as evidenced by the following:

We submitted notations for a patent application disclosing my conception of the invention prior to April 16, 1999, and after the date of conception. These notations are reflected in an invention submission form, which is kept in the regular course of business. A true and correct copy of this invention submission form is attached hereto as Exhibit A. Thereafter, we

participated in the preparing information necessary for subsequent filing of the above referenced Patent Application in the United States, which was diligently prepared and filed with the United States Patent Office on June 3, 1999, as evidenced by Exhibits B-G.)

For example, the invention submission form was sent to outside council on June 16, 1998, to prepare a patent application as evidenced by Exhibit B. We reviewed drafts of the patent application and provided comments and changes to the various drafts until a final draft was completed. Evidence of the draft applications that we reviewed is provided by Exhibits C, D, E and F. The first draft was sent to my co-inventor on October 15, 1998, for our review as evidenced by Exhibit C. Additionally, the second draft was sent November 3, 1998, as evidenced by Exhibits D, the third draft was sent February 10, 1999, as evidenced by Exhibit E and the final draft was sent May 12, 1999, as evidenced by Exhibit F. After the final draft was completed and ready for filing, we signed the Declaration and Assignment forms as evidenced by Exhibit G.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the Application or any patent issuing thereon.



Chin-Hui Lee


Date: \_\_\_\_\_

11/25/03

**EXHIBIT A****Lucent Technologies**  
Bell Labs Innovations**Bell Laboratories****Subject: Patent Proposal****date: February 26, 1998****from: Sid R. Ahuja**  
**Org. BL011330**  
**MH 2D-540**  
**908-582-4428****R. D. Slusky:**

Please consider, for patentable features, Chin-Hui Lee and Padma Ramesh's paper entitled, "Voice Message Filtering for Classification of Voice Messages According to the Caller". This material has already been discussed informally with Ken Brown.

**MH-BL011333-lc****Atts.**  
**as above**

CRF   
**S. R. Ahuja**

**Copy to**  
**Ken Brown**  
**Chin-Hui Lee**  
**Padma Ramesh**

Class number: <u>VI</u>	<u>2/26/98</u>
Criterion letter: <u>dse</u>	<u>Chin-Hui Lee</u>
	Signature

--

For Dept. Head / Director's Use Only

For IP-Law Use Only

## LUCENT TECHNOLOGIES, INC.

DISCLOSURE OF INVENTION

THIS DESCRIPTION SHOULD BE SUPPLEMENTED BY ATTACHING COPIES OF RELEVANT DOCUMENTS, SUCH AS TECHNICAL MEMORANDA, PUBLISHED OR TO-BE-PUBLISHED ARTICLES, AND ENGINEERING NOTEBOOK PAGES.  
(Also, if for any item there is insufficient space on the form, attach additional pages as necessary.)

DESCRIPTIVE TITLE OF THE INVENTION: Key Segment Spotting in Voice  
messages

INVENTOR #1: Chin-Hui Lee Bell Labs / MH  
Name (Print) Company/Location  
chl@research.bell-labs.com Sid Ahuja  
Phone/E-mail Director's Name

INVENTOR #2: Padma Ramesh Bell Labs / MH  
Name (Print) Company/Location  
padma@research.bell-labs.com Sid Ahuja  
Phone/E-mail Director's Name

INVENTOR #3: \_\_\_\_\_  
Name (Print) Company/Location  
Phone/E-mail Director's Name

2. PRIMARY CONTACT

If more than one inventor is named above, who will have the primary responsibilities for interfacing with Lucent IP-Law with respect to preparing and prosecuting a patent application for the invention?

Inventor Name: Padma Ramesh

3. PRESENT STATE OF THE INVENTION

☐ Idea ☒ Research ☒ Development

☐ Manufacture (Product Name \_\_\_\_\_ Ship Date \_\_\_\_\_)

4. GOVERNMENT CONTRACT INVENTION

Was the invention made under a government contact? ☐ Yes ☒ No

Class number: <u>II</u>	Date: <u>2/26/98</u>
Criterion letter: <u>d2e</u>	Signature: <u>Chin-Hui Lee</u>

For Dept. Head / Director's Use Only

For IP-Law Use Only

## LUCENT TECHNOLOGIES, INC.

DISCLOSURE OF INVENTION

THIS DESCRIPTION SHOULD BE SUPPLEMENTED BY ATTACHING COPIES OF RELEVANT DOCUMENTS, SUCH AS TECHNICAL MEMORANDA, PUBLISHED OR TO-BE-PUBLISHED ARTICLES, AND ENGINEERING NOTEBOOK PAGES.  
(Also, if for any item there is insufficient space on the form, attach additional pages as necessary.)

DESCRIPTIVE TITLE OF THE INVENTION: Key Segment Spotting in Voice  
Messages

INVENTOR #1: Chin-Hui Lee Bell Labs / MH  
Name (Print) Company/Location  
chl@research.bell-labs.com Sid Ahuja  
Phone/E-mail Director's Name

INVENTOR #2: Padma Ramesh Bell Labs / MH  
Name (Print) Company/Location  
padma@research.bell-labs.com Sid Ahuja  
Phone/E-mail Director's Name

INVENTOR #3: \_\_\_\_\_  
Name (Print) Company/Location  
Phone/E-mail Director's Name

2. PRIMARY CONTACT

If more than one inventor is named above, who will have the primary responsibilities for interfacing with Lucent IP-Law with respect to preparing and prosecuting a patent application for the invention?

Inventor Name: Padma Ramesh

3. PRESENT STATE OF THE INVENTION

☐ Idea ☒ Research ☒ Development

☐ Manufacture (Product Name \_\_\_\_\_) Ship Date \_\_\_\_\_)

4. GOVERNMENT CONTRACT INVENTION

Was the invention made under a government contract? ☐ Yes ☒ No

## SUBMISSION INFORMATION

Attorney: K. H. BROWNSubmission Title: Key Segment Spotting IN Voice Messages

Filing Deadline: \_\_\_\_\_

Date Received From Inventor(s): MARCH 3, 1998PLEASE SUPPLY WHATEVER INFORMATION IS READILY AT HAND:  
(If additional space is needed, please use a second sheet)INVENTOR: LEE Chin-Hui  
Last First Middle

SSN (if known): \_\_\_\_\_

Organization No.: BLO 1133INVENTOR: RAMESH, PADMA  
Last First Middle

SSN (if known): \_\_\_\_\_

Organization No.: BLO 113330INVENTOR: \_\_\_\_\_  
Last First Middle

SSN (if known): \_\_\_\_\_

Organization No.: \_\_\_\_\_

INVENTOR: \_\_\_\_\_  
Last First Middle

SSN (if known): \_\_\_\_\_

Organization No.: \_\_\_\_\_

Please attach all paperwork desired to be bound into folder.

PT 360.subinfo (10/97)

## **Voice Message Filtering for Classification of Voice Messages according to the Caller**

**Padma Ramesh and Chin-Hui Lee**

This is an application of Speaker Verification and Speaker ID for identifying the callers and classifying the messages in Voice mail.

For example, To get messages from the caller "Tom": Use speaker verification and/or identification to Detect the messages from "Tom".

This application also uses the current knowledge in speech recognition, wordspotting, utterance verification, and extends it to the voice message filtering application to classify and retrieve messages from the callers. It will also use speech coding technology for use with coded voice mail messages. There is no known product at this time for this application.

The purpose of this application is to identify the caller and classify the voice messages according to the caller. The call classes can be assigned priorities based on the caller. This enables priority messaging, which is important when sorting through a lot of voice mail messages. This speeds up the process of looking for messages from certain people. This invention will verify if the message is from a registered or a given caller and then classify the messages according to the caller. It can then retrieve only the desired messages. This will enable one to just get to the desired message instead of having to listen to all the messages sequentially up to the one, the user is interested in.

Caller classification and message filtering is achieved by the following steps.

1. First the users register the callers they would like to spot in the messages. During the registration, the caller characteristics are stored. Then the user can provide a call priority for the caller class.
2. When a message is received, its caller class is determined by performing speaker verification and/or identification using the caller characteristics. Messages are then sorted using the caller classes.
3. When the user requests messages from the caller class, the messages from that caller class are retrieved from the sorted messages. The user can also request messages with a given call priority. Messages from all the call classes with the given priority are then retrieved.

### **User Registration:**

The following steps are used in the user registration process and is shown in Figs.

- 2 -

1a and 1b.

1. User listens to a message from the caller.
2. The user registers it as a caller class by pressing \*\*S (for save).
3. The caller's characteristics are then saved and stored as a code book or an acoustic segment model with HMM.
4. The system prompts the user to provide a caller class ID.
5. A caller class ID is given to the system as a speech sample from the user, or as text from a keyboard if available, or as a number on the keypad such as #5. Each class can have speech, text, or number ID or any combination of these.
6. The caller class ID is then registered by pressing \*\*R.
7. If speech sample is given for the caller class ID, its pronunciation is obtained by speaker independent speech recognition, and is stored. For the caller class ID of text, a text-to-speech front end is used to determine the pronunciation. The pronunciation is also stored in addition to the text. This can be used later on for message retrieval with speech input.
8. If desired, a call priority can be assigned to the call class by pressing #3\*\*I for a priority of 3. Message classes that are not given any priority by the user are assigned a default priority.
9. The user terminates the registration of this caller by pressing ##.

**Message Handling:**

Message Handling is shown in Fig. 2a. Every message that is received is compared to the registered caller's voice characteristics. Speaker ID is performed using all the registered voice patterns, or speaker verification can be performed sequentially to identify the caller of the message. The message is then tagged with the caller class ID, as belonging to that caller class. The messages are then classified by the caller classes. Messages that do not belong to any caller class are identified and grouped as belonging to the "other class".

**Message Retrieval:**

The message retrieval phase is shown in Fig. 3.

1. The user requests messages from a particular caller class by either speaking or typing the caller class ID, or by pressing the keypad number, for example, #5\*\*M for messages from the caller class 5.
2. If the caller class ID is given as speech, speech recognition is performed on all the registered class ID's with pronunciation, to determine the requested class ID.



- 3 -

3. Messages from the requested caller class are played back to the user sequentially.
4. If messages with a particular priority are requested by pressing #3\*\*C for calls with priority of 3, all the messages from call classes with the priority of 3 are played back sequentially.

In addition to caller classification and message retrieval, a list of all the registered callers is provided by \*\*L key. In order to provide a secure access to the messages, speaker verification can be used to verify that the user is an authorized user.

If a caller's voice pattern is not registered, but only their name is registered, the name segment can be detected and verified using Key segment detection and utterance verification using the pronunciation. For example, to get messages from the caller "Tom", detect and verify the phrase "My name is Tom" or "This is Tom" in the message. This is done by using key segment detection and utterance verification, with the speaker independent subword Hidden Markov Models (HMM) and the pronunciation to look for caller name phrases such as "This is Tom", "Tom here", "My name is Tom" and so on. Message Handling when the caller's voice is not registered is shown in Fig. 2b.

Caller classification can also be achieved by registering the phone number for the caller, and extracting the extracting the telephone number using Caller ID (if available).

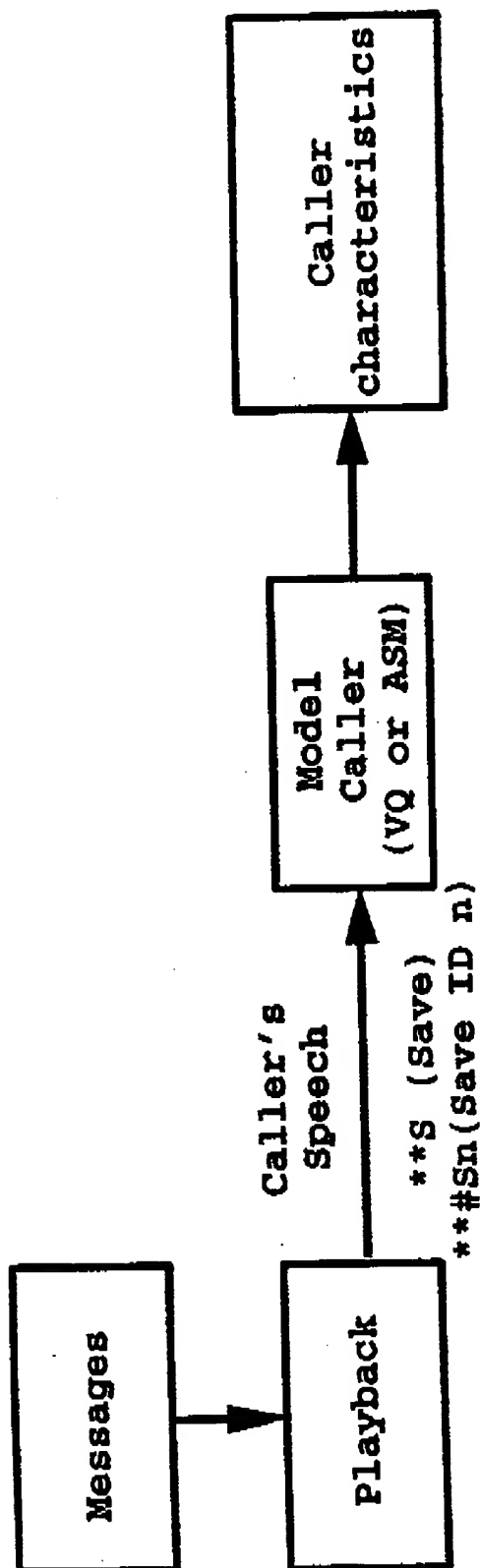


Fig. 1a. Caller Registration

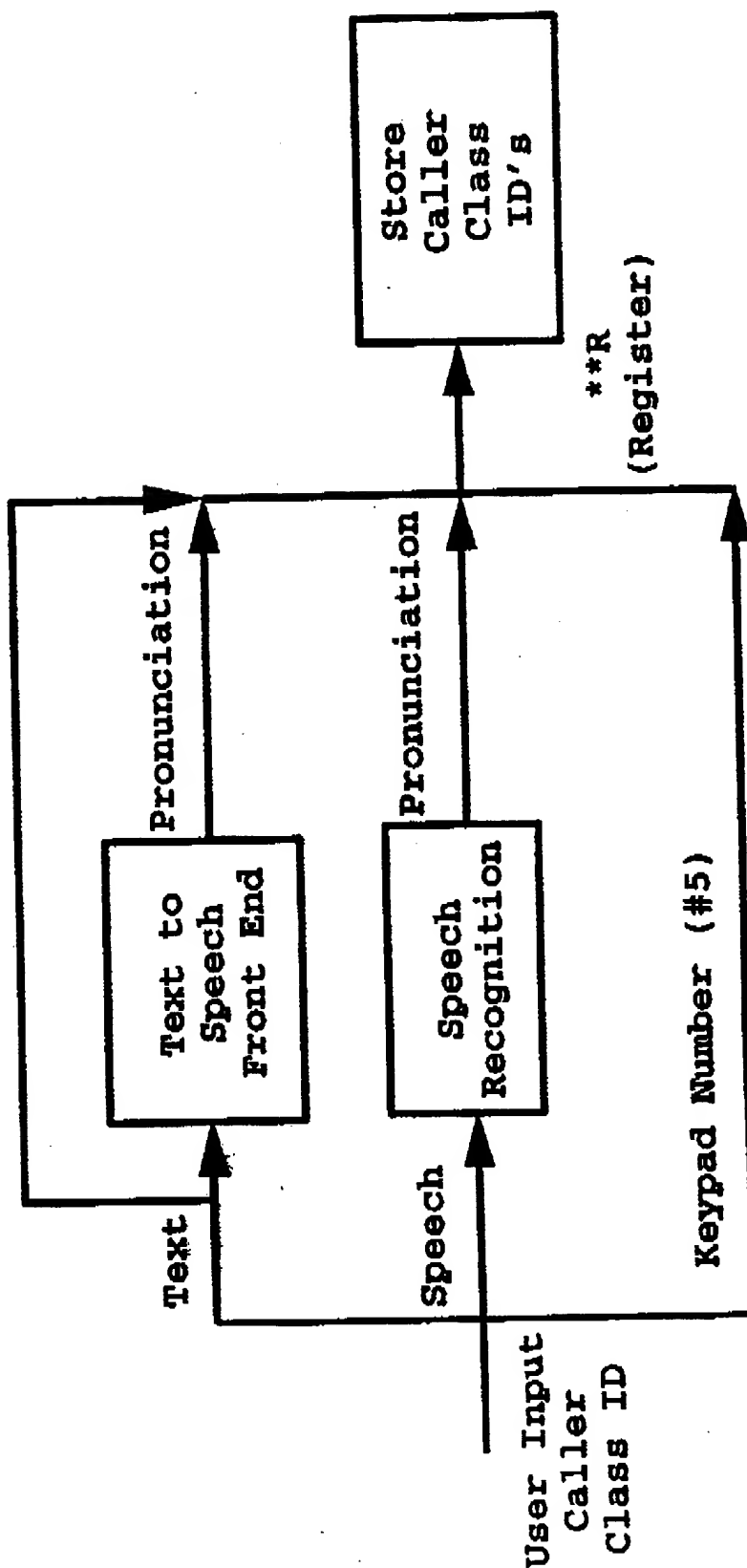
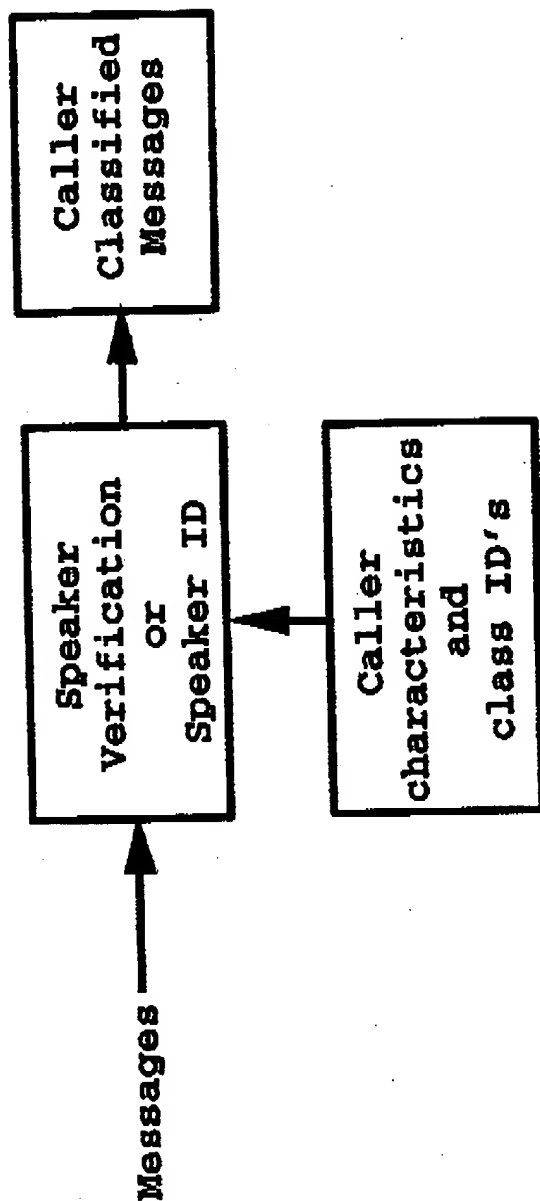
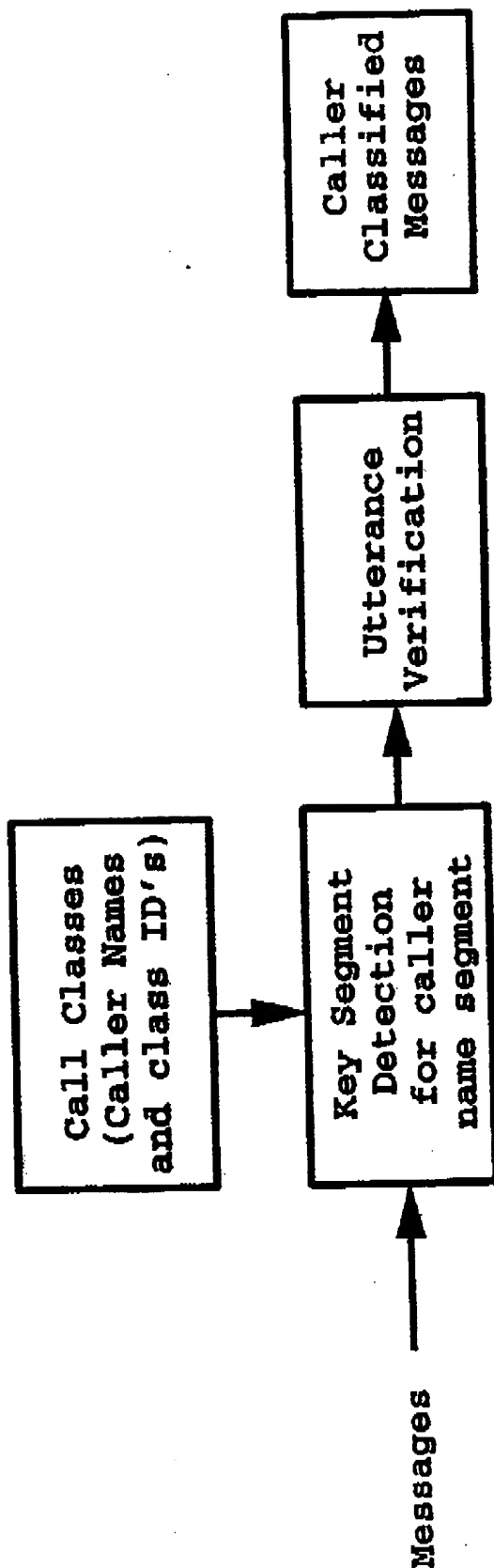


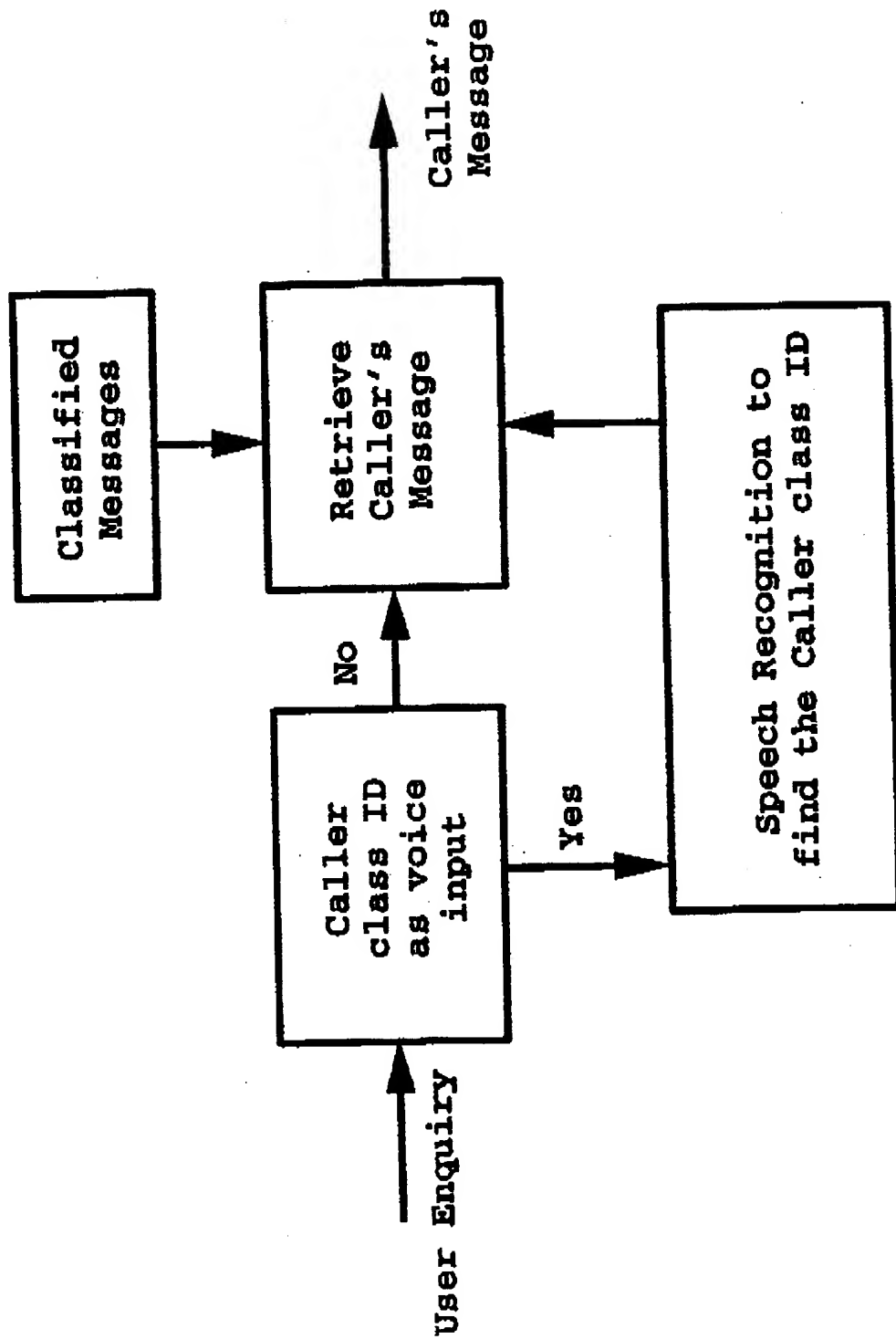
Fig. 1b. Caller Class ID Registration



**Fig. 2a. Message Handling for  
Caller Classification with  
Registered Caller Speech**



**Fig. 2b. Message Handling for  
Caller Classification without Caller  
Speech Registration**



**Fig. 3. Caller Classified Message Retrieval**

## Key Segment Spotting in Voice Messages

Padma Ramesh and Chin-Hui Lee

This is an application of key phrase detection and verification for key segment spotting in voice mail.

For example, To spot name segments: Detect and verify the segment "My name is ..." or "This is ...". To spot the phone number segment, detect and verify the segment "My number is ..." or "Call me back at ...." or even spotting the digit part of the message such as "my number is 364-7589".

This application uses the current knowledge in speech recognition, wordspotting, utterance verification, and speech coding, and extends it to the key segment spotting application for voice mail messages. There is no known product at this time for this application.

The purpose of this application is to identify and spot segments containing key information in voice messages. This is important when sorting through a lot of voice mail messages. This speeds up the process of looking for particular messages, messages from certain people, or when looking for certain segments of the messages. This invention will spot the key segments and can then retrieve only the desired segments. This will enable one to just get to the desired section of the message instead of having to listen to the message up to the desired segment.

Keyword Segment Spotting is achieved as follows. First the users register the key segments they would like to spot in the messages. This can be done via text, or by voice. General key segments such as name segments and phone numbers may be provided without registration as predefined segments. To access these the user may use certain keys on the phone, such as, \*\*T for the telephone number segment, \*\*N for the name segment, \*\*D for the date segment, and so on. Furthermore, the telephone number detection with \*\*T allows for phone number verification, as well as for redial with \*\*C. Also, the user may register the key segments by using part of the message itself with \*\*S. This feature will be useful for example, for saving the actual names of the message sender, in order to spot them later.

User registration process is described in Fig. 1. The user inputs the key segment to be registered as either text, pronunciation (text), or speech form. The text is processed through the text-to-speech front end to obtain the pronunciation. Speech is processed through the speech recognizer and a pronunciation is

- 2 -

obtained. This pronunciation is stored as the Key segment characteristics.

When the voice messages are received, these are processed through the message handler shown in Fig. 2. to look for the registered and the predefined key segments. The segment characteristics and speaker independent models (for the sound units of the pronunciation) are used during the message handling, to spot the key segment using wordspotting or phrase detection technology. In addition, utterance verification may be used to enhance the detection accuracy. The messages are then tagged with the key segments and their locations in the messages to facilitate their retrieval later.

The message retrieval phase is shown in Fig. 3. On receiving the user enquiry for a segment, first it is checked to see if it is a registered or predefined segment. If so, the message is already tagged and the desired segment is retrieved. If it is a new key segment, its pronunciation is first obtained as shown in Fig. 1 of user registration, and then the message is tagged using the message handler. After the message is tagged, the desired segment is retrieved.

When a key segment is retrieved, it can be saved for future use as a key segment by the use of the keys \*\*S. This will enable us to save for example, the message sender's name in their own voice for later use of identifying, tagging and retrieving their messages. Furthermore, if the name segment is retrieved, it can be used to identify the caller and hence for message filtering and classification of messages according to the caller.

This application uses speech recognition, wordspotting, keyword detection and utterance verification technologies for spotting the key segments in the messages. It will also use speech coding technology for key segment spotting in coded voice mail messages. It requires utterance verification of variable number digits for retrieving telephone numbers.



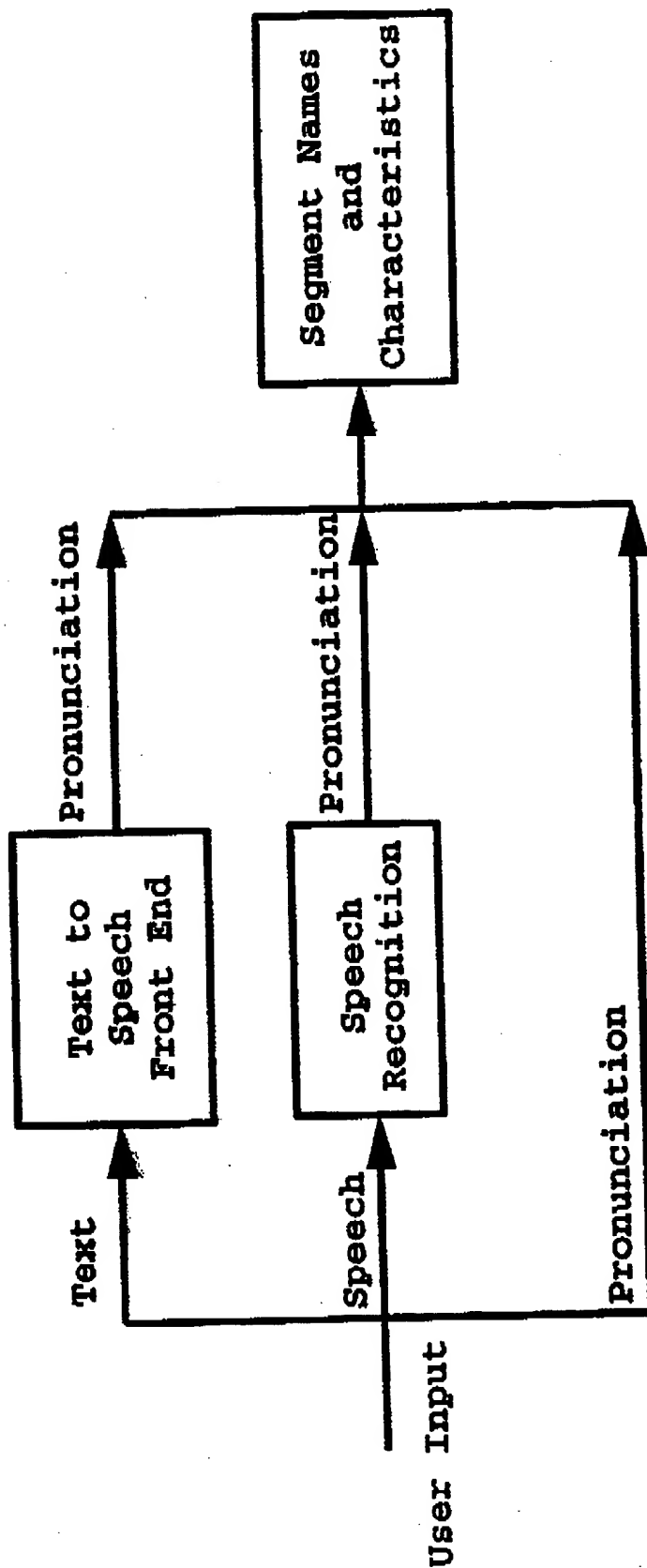
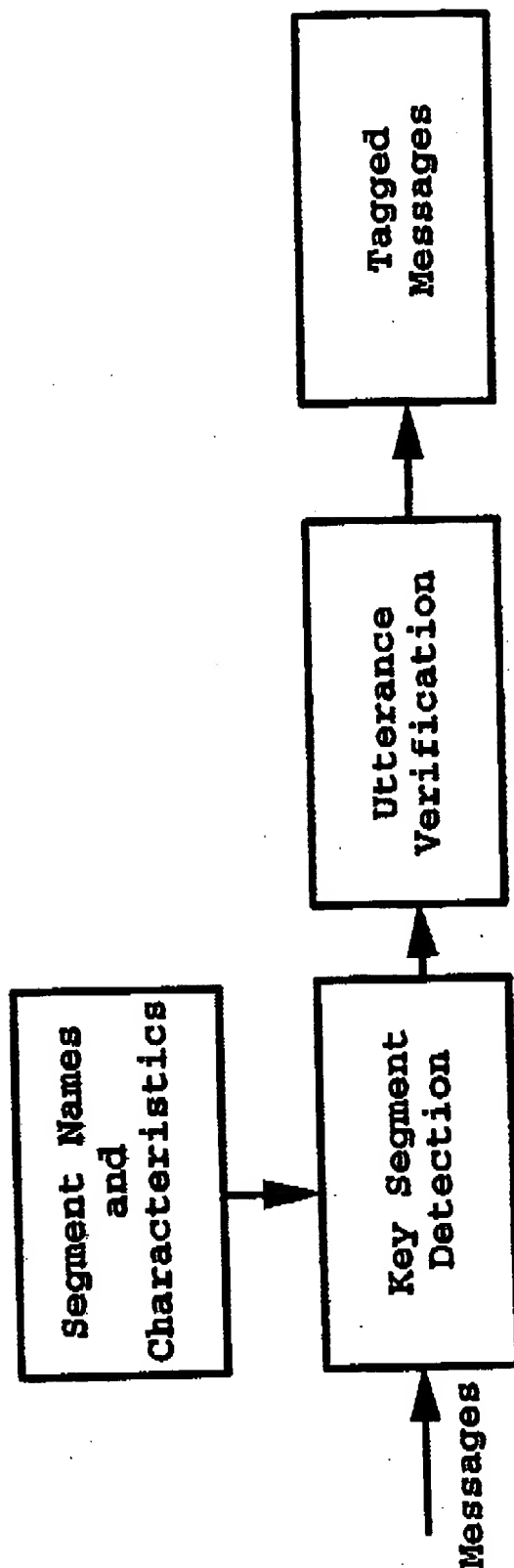


Fig. 1. Key Segment Registration



**Fig. 2. Message Handling for  
Key Segment Identification**

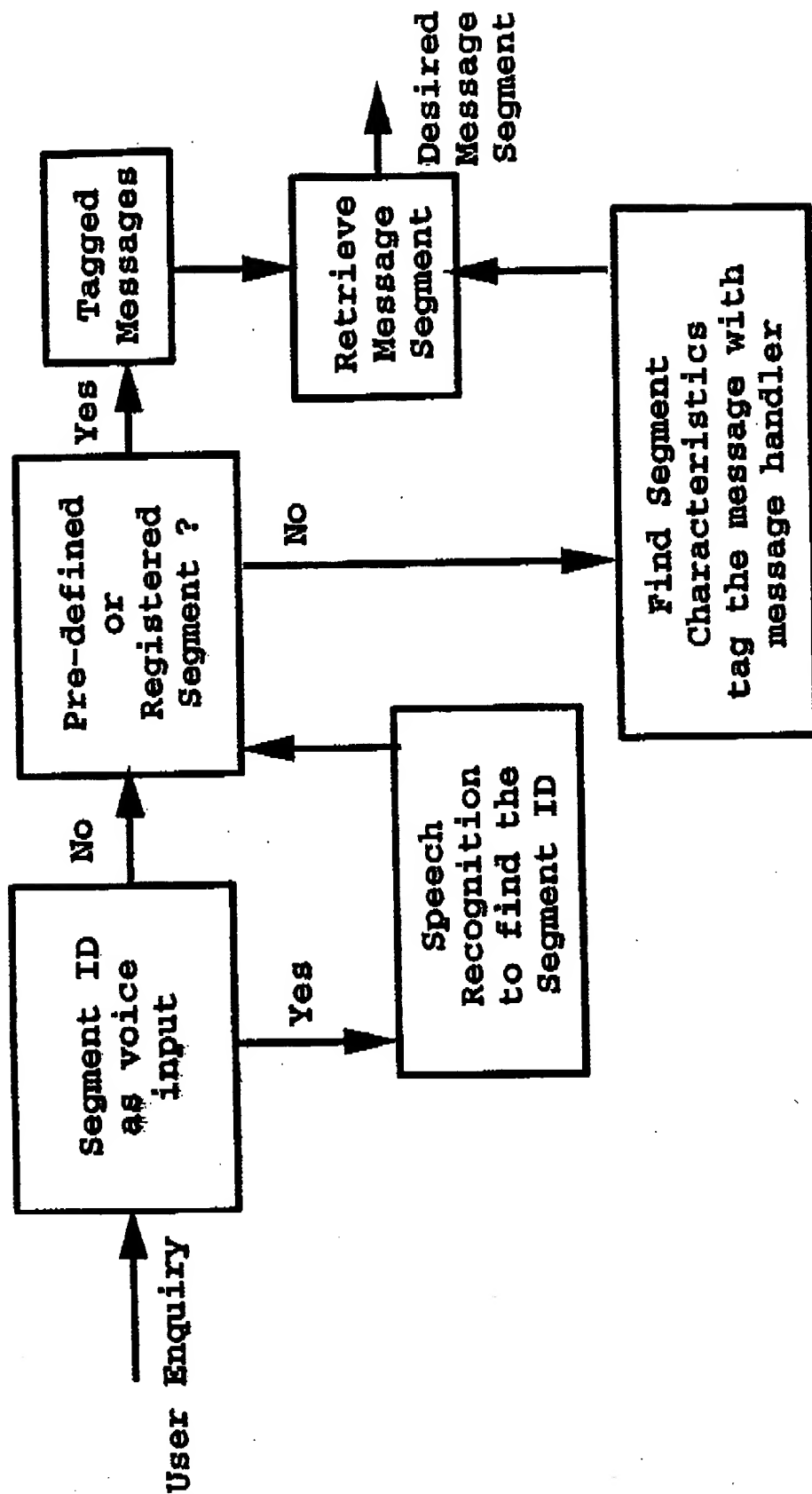


Fig. 3. Retrieval of Key Segments and messages with Key Segments

Padma Ramesh (Chin Lee's dept)

10/7/97

Caller ~~identification~~ classification + key segment spotting  
in audio voice messages

classifying ~~by message based on~~ <sup>by message based on</sup> ~~speaker~~ who it <sup>is</sup> the call from

by speaker identification

⇒ Application patent(s)  
- combined speaker id.  
+ ~~speech~~ word  
spotting techniques

⇒ ~~potential~~ <sup>potential</sup> ~~is not~~ <sup>is not</sup> ~~feasible~~ <sup>feasible</sup>

finding the important part  
of the message.

look for a keyword (e.g., after getting  
an initial list)

Speaker independent (possibly  
keyword phrase recognition)

(one application could be look  
for "my name is"  
as another way of doing the  
caller classification)

(another application could be "the  
meeting is in \_\_\_ at \_\_\_")  
(another application - extract phone # to  
call back)

potential

Novelty? : Speech recognition on ~~or~~ a voice message  
[using word/phrase spotting techniques]

106

12/3/96 4AM

(Padma's proje.  
including database code)

Patent Idea 1

Messaging Filtering: "Caller Classification" (using acoustic segment models)

e.g. "Is there any message  
from \_\_\_\_\_?"Two steps: (1) Registration:  
(Three functions) e.g. \*XS for saving the voice char  
of the specified senderAlso provide  
user speaker  
verification(use VQ or ASM) and  
attach an ID such as "Arav"(2) Retrieval and Caller Classification  
for security access enhancement (3) List all callers being identified  
"Arav" "Babbar" "Nikhil", etc.II "Key Segment Spotting" (using Keyphrase  
detection & verification)

e.g. Name: "My name is ..."

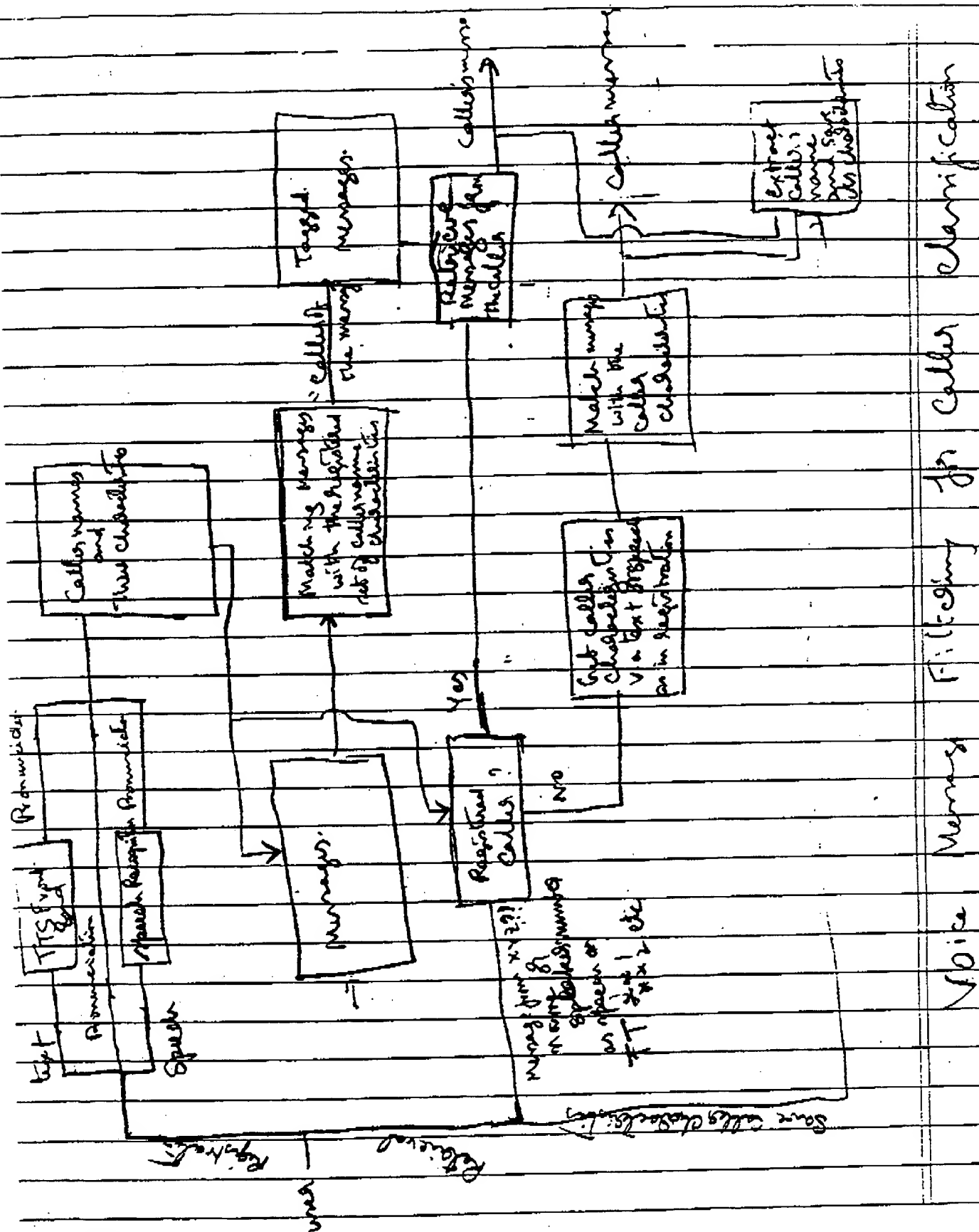
Number: "My number is ..."

purpose: "identify and spotting key segments  
containing key information based  
on spotting key phrases from voice  
messages" \*\*I for playing backsegments containing numbers, \*\*N  
for playing back name segments

need: variable number digit verification

accuracy: can have variable level of false alarm rate

(Utterance Verification)  
@ Coded Speech



## 5. PRESENT STATE OF THE ART

Briefly describe the closest already-known technology that relates to the invention. This would include, for example, already existing products, methods or compositions which are known to you personally or through descriptions in publications or patents.

Word spotting: This involves for any fragment of keywords or key phrases in the input speech utterance. This involves matching the characteristics of the keywords & key phrases and filter segments another matching the input speech utterance with these models to find the best keyword & key phrase.

Utterance verification: This is used to verify if the speech input has a particular keyword & key phrase.

## 6. ADVANCEMENT IN STATE OF THE ART

Briefly describe the unique advancement achieved by the invention. This may be done, for example, by describing a problem with the prior art that is solved or specific objects that are achieved by the invention.

This invention extends the word spotting and utterance verification technologies to the "caller classification" application for voice messages. This enables us to classify the voice messages according to a registered set of callers. This will enable the user to select and retrieve just the messages from any of the registered set of callers. The system can also be enhanced with the use of speaker verification for increasing the access security.

## 7. HOW ACHIEVED

Briefly describe the invention and how it achieves the advancement described in paragraph 6.

The user first registers a set of caller names. This can be done either via text or by speech input. When the voice messages are received they are compared to the name models for the callers and are classified as coming from one of the registered callers or other. This can be done as soon as the message is received or at the time of retrieval. When the user is ready to retrieve the messages, the user can retrieve messages of any one of the registered callers by speaking the name or by touch tone input for a speaker number. The user's own name model can be saved by a touch speech input.

## 8. DISCLOSURE OUTSIDE OF LUCENT

Anticipated Publication Date: \_\_\_\_\_

Publication Name: \_\_\_\_\_

Submitted to Publication Clearance? \_\_\_\_\_

☐ Yes ☒ No

If the invention was or will otherwise be disclosed to any non-Lucent employee, describe to whom (person/company), when, where, why, and whether it was/will be under a non-disclosure agreement.

## 9. INVENTOR #1: \_\_\_\_\_

Signature

Date

## INVENTOR #2: \_\_\_\_\_

Signature

Date

## INVENTOR #3: \_\_\_\_\_

Signature

Date

5. PRESENT STATE OF THE ART

Briefly describe the closest already-known technology that relates to the invention. This would include, for example, already existing products, methods or compositions which are known to you personally or through descriptions in publications or patents.

Word Spelling

6. ADVANCEMENT IN STATE OF THE ART

Briefly describe the unique advancement achieved by the invention. This may be done, for example, by describing a problem with the prior art that is solved or specific objects that are achieved by the invention

This invention uses key phrase detection and/or utterance verification technologies to look for certain key segments such as names. This is XYZ; My name is XYZ. Telephone numbers, "My number is 123-456-7890" and so on. This will search for & play the desired speech segments only, instead of the whole message.

7. HOW ACHIEVED

Briefly describe the invention and how it achieves the advancement described in paragraph 6.

The user may pre-define some key segments. Then when the message is received or at the time of retrieval, the message is compared to the speech characteristics. The key segments of interest to extract that part from the message. Then just that segment of interest such as "My name is XYZ" or "My phone number is 123-456-7890" is played back to the user. This enables the user to extract just the desired information without having to listen to the complete message.

8. DISCLOSURE OUTSIDE OF LUCENT

Anticipated Publication Date: \_\_\_\_\_ Publication Name: \_\_\_\_\_

Submitted to Publication Clearance? ☐ Yes ☒ No

If the invention was or will otherwise be disclosed to any non-Lucent employee, describe to whom (person/company), when, where, why, and whether it was/will be under a non-disclosure agreement.

9. INVENTOR #1: \_\_\_\_\_  
Signature Date

INVENTOR #2: \_\_\_\_\_  
Signature Date

INVENTOR #3: \_\_\_\_\_  
Signature Date



## EXHIBIT B

June 16, 1998

Lucent Technologies  
Bell Labs Innovations

VIA EXPRESS MAIL

Chris Kolefas, Esq.  
Baker & McKenzie  
805 Third Avenue  
New York, NY 10022Eli Weiss  
Corporate Counsel  
Intellectual Property - Law101 Crawfords Corner Road  
Room 3K-206  
P.O. Box 3030  
Holmdel, NJ 07733-3030Telephone 732 949 3147  
Facsimile 732 949 0292  
E Mail holawa@ewRe: IDS No.: 115485  
Managing Attorney  
Kenneth M. BrownTelephone No.  
908-582-5998Fax No.  
908-582-4020Secretary  
Anna BrazilTelephone No.  
908-582-6925

Dear Chris:

The above-referenced patent submission is enclosed with this letter. This case is closely related to IDS 115486. Prior to contacting the authors of the submission, please call the Managing Attorney identified above for his thoughts and instructions.

**NOTE:** This case should be filed by **October 20, 1998**. Please call the Managing Attorney to confirm that this case will be filed on time. If for any reason you cannot meet this date, you **MUST** notify the Managing Attorney and me, **VIA FACSIMILE**, as soon as possible and no later than 2 weeks prior to our requested date. If possible, the Managing Attorney will then determine if a new but final date can be assigned. Whenever the Managing Attorney and you agree to change the date to file, confirmation via facsimile must be sent to the Managing Attorney and to me for our records.

As soon as you have identified the inventors, please call Joyce Petruzzelli at (732) 949-6068 for a case name and number. After the application is completed, but before the Declaration and Assignment are executed, please send a copy to the Managing Attorney for his review and oral authorization to file. The completed application is to be mailed from your office directly to the USPTO. A copy of all papers which are sent to the USPTO should be sent to Joyce Petruzzelli for our files together with the debit note for preparing the patent application.

Please sign and return a copy of this letter to the Managing Attorney and to me, via facsimile, as confirmation of receipt of the enclosed submission.

Very truly yours,

Eli Weiss  
Corporate Counsel

EW:jp

Atts.  
As aboveCopy to:  
K. M. Brown  
C-H. Lee  
P. Ramesh

Received:

Date: 6-19-98

SUBMISSION NO. : 115485

ATTORNEY : Brown, Kenneth M.

Title :  
Key Segment Spotting  
In Voice Messages

## -----MAIN INFORMATION-----

ITEM STATUS	: Opened	LUCENT RATING	:
STATUS DATE	: 05/28/1998	PATENT WPN	: U0
OPEN DATE	: 03/03/1998	GOVT. CONTRACT	: No
CLOSE DATE	:	TYPE	: Patentability
DEADLINE DATE	:	DEFENSIVE	: No
BU CODE(S)	: BLRS		

## -----SUBMITTER INFORMATION-----

SUBMITTER NAME : Lee, Chin-Hui  
COMPANY : LUCENT  
LOC\_EXT : MH 5226  
DEPARTMENT : BL0113330  
DIRECTOR : S. Ahuja

SUBMITTER NAME : Ramesh, Padma  
COMPANY : LUCENT  
LOC\_EXT : 908-582-7688  
DEPARTMENT : BL0113330  
DIRECTOR : S. Ahuja

Brief Description :

No data in this field

## INVENTOR INFORMATION

LAST NAME	FIRST NAME	MIDDLE NAME
Lee	Chin-Hui	
THIRD NAME	SUFFIX	SSN
		048666689

STREET : 118 Runnymede Parkway  
CITY : New Providence  
MAIL CITY : New Providence  
COUNTY : Union  
STATE : NJ  
CTRY CODE : USA  
ZIP : 07974  
LOC/EXT : MH 5226  
COMPANY CODE : LUCENT  
DIRECTOR : S. Ahuja  
PATENT COUNT :  
PREVIOUS NAME:

P.O. BOX :  
RURAL ROUTE :  
CITIZENSHIP : USA  
ASSIGNEE CODE: LUCENT  
FIRST PATENT :  
DEPARTMENT : BL0113330  
LAST CASE : 21  
REVISED DATE : 05/27/1998

Ramesh, Padma (Padma)

hrid=3730227

tel=+1 908 582 7688

fax=+1 908 582 7308

cel=

pgr=

room=2C-568

hpurl=

600-700 Mountain Ave, P O Box 636, Murray Hill, NJ 07974-0636 U S

tl=

bg=BL

bsg=BLRS

bu=BLRS

ppin=

loc=NJ9620

org=BL0113330

jtname=member technical staff

id=pramesh

mail\_to: pramesh@lucent.com

ema=padma@research.bell-labs.com

oldloc=mb

Lee,Chin-Hui (Chin-Hui)

hrid=2165923

tel=+1 908 582 5226

fax=+1 908 582 7308

cel=

pgr=

room=2D-527

hpurl=

600-700 Mountain Ave, P O Box 636, Murray Hill, NJ 07974-0636 U S

cl=

bg=BL

bsg=BLRS

bu=BLRS

ppin=

loc=NJ9620

org=BL0113330

jtname=m t s dept head

id=chl

mail\_to: chl@lucent.com

ema=chl@research.bell-labs.com

oldloc=mh

**EXHIBIT C**

BAKER & MCKENZIE

ATTORNEYS AT LAW

805 THIRD AVENUE  
NEW YORK, NEW YORK 10022  
TELEPHONE (212) 751-5700  
CABLE ABOGADO · TELEX 62572  
FACSIMILE (212) 759-9133

October 15, 1998

EUROPE  
MIDDLE EAST

AMSTERDAM	MILAN
BARCELONA	MOSCOW
BERLIN	MUNICH
BRUSSELS	PARIS
BUDAPEST	PRAGUE
CAIRO	RIYADH
FRANKFURT	ROME
GENEVA	ST. PETERSBURG
KIEV	STOCKHOLM
LAUSANNE	WARSAW
LONDON	ZURICH
MADRID	

ASIA  
PACIFIC

ALMATY  
BAKU  
BANGKOK  
BEIJING  
HANOI  
HO CHI MINH CITY  
HONG KONG  
HSHMNU  
MANILA  
MELBOURNE  
SINGAPORE  
SYDNEY  
TAIPEI  
TOKYO

## NORTH AND SOUTH AMERICA

BOGOTA	MEXICO CITY	SAN FRANCISCO
BRASILIA	MIAMI	SANTIAGO
BUENOS AIRES	MONTERREY	SAO PAULO
CARACAS	NEW YORK	TIJUANA
CHICAGO	PALO ALTO	TORONTO
DALLAS	RIO DE JANEIRO	VALENCIA
HOUSTON	SAN DIEGO	WASHINGTON, D.C.
JUAREZ		

**BY FAX**

**Padma Ramesh**  
**Lucent Technologies Inc.**  
**Room 2C-568**  
**700 Mountain Avenue**  
**Murray Hill, NJ 07974-0636**

Re: Patent Application for  
KEY SEGMENT SPOTTING IN VOICE MESSAGES  
Case: Lee 22-1

Dear Padma:

Attached please find a first draft of the above-identified patent application.


Please review the application for accuracy and completeness. The application must provide sufficient information to allow a person of ordinary skill in the field to implement and practice the invention. The application must also disclose the best mode of practicing the invention known to you.

Please provide a copy of the application to Chin-Hui Lee for his review.

As you will note, there are several questions in boldface in the draft application which you need to answer. Please provide your answers and/or comments as soon as possible so that we may file this application by Tuesday, October 20.

If you have any questions, please do not hesitate to call me at 212-891-3956.

Sincerely,

Sincerely,  
  
Chris Kolefas

Att.

NYLIT 49788

**EXHIBIT D**

**BAKER & MCKENZIE**  
Attorneys at Law  
805 Third Avenue  
NEW YORK, NEW YORK 10022  
Telephone: (212) 751-5700  
Facsimile: (212) 759-9133

**FACSIMILE TRANSMISSION****DATE:** November 3, 1998**TIME :****TO:** Padma Ramesh**COMPANY:** Lucent Technologies, Inc.**FAX  
NUMBER(s):** 1-908-582-7308**FROM:** Chris Kolefas**RE:** Lee 22-1 (KEY SEGMENT SPOTTING IN VOICE MESSAGES)**TOTAL NUMBER OF PAGES (INCLUDING THIS COVER PAGE): 13****PRIVACY AND CONFIDENTIALITY NOTICE**

The information contained in this facsimile is intended for the named recipients only. It may contain privileged and confidential information and if you are not an intended recipient, you must not copy, distribute or take any action in reliance on it. If you have received this facsimile in error, please notify us immediately by a collect telephone call to (212) 751-5700 and return the original to the sender by mail. We will reimburse you for postage. Thank you.

**MESSAGE**

Padma:

Attached is a second draft of the above-referenced patent application incorporating your comments of 10/20 into the first draft of the application (which I fax'ed to you 10/15). As you can see, there are several questions that are still unanswered. Please review this draft. Perhaps this time it would be more efficient if we went over the application on the telephone. Please call me when you are ready to do so.

Thank you,

Chris Kolefas

IF YOU HAD ANY TROUBLE RECEIVING THIS TRANSMISSION,  
PLEASE CALL (212) 751-5700 EXT: 3956 IMMEDIATELY.

**EXHIBIT E**

**BAKER & MCKENZIE**  
Attorneys at Law  
805 Third Avenue  
NEW YORK, NEW YORK 10022  
Telephone: (212) 751-5700  
Facsimile: (212) 759-9133

**FACSIMILE TRANSMISSION**

**DATE:** February 10, 1999 **TIME :**  
**TO:** Padma Ramesh  
**COMPANY:** Lucent Technologies, Inc.  
**FAX**  
**NUMBER(s):** 1-908-582-7308  
**FROM:** Chris Kolefas  
**RE:** Lee 22-1 (KEY SEGMENT SPOTTING IN VOICE MESSAGES)

**TOTAL NUMBER OF PAGES (INCLUDING THIS COVER PAGE): 14**

---

**PRIVACY AND CONFIDENTIALITY NOTICE**

---

The information contained in this facsimile is intended for the named recipients only. It may contain privileged and confidential information and if you are not an intended recipient, you must not copy, distribute or take any action in reliance on it. If you have received this facsimile in error, please notify us immediately by a collect telephone call to (212) 751-5700 and return the original to the sender by mail. We will reimburse you for postage. Thank you.

---

**MESSAGE**

---

Padma:

Attached is a third draft of the above-referenced patent application. Please review this draft and provide to me your comments at your earliest convenience.

Thank you,

Chris Kolefas

**IF YOU HAD ANY TROUBLE RECEIVING THIS TRANSMISSION,  
PLEASE CALL (212) 751-5700 EXT: 3956 IMMEDIATELY.**



**EXHIBIT F**

**BAKER & McKENZIE**  
Attorneys at Law

805 Third Avenue  
**NEW YORK, NEW YORK 10022**  
Telephone: (212) 751-5700  
Facsimile: (212) 759-9133

**FACSIMILE TRANSMISSION**

**DATE:** May 12, 1999  
**TO:** Kenneth Brown, Esq.  
Lucent Technologies, Inc.  
**FAX NUMBER:** 908-582-4020  
**FROM:** Chris Kolefas  
**RE:** Lee 22-1 and Lee 23-2

**TIME :****TOTAL NUMBER OF PAGES (INCLUDING THIS COVER PAGE) : 31****PRIVACY AND CONFIDENTIALITY NOTICE**

The information contained in this facsimile is intended for the named recipients only. It may contain privileged and confidential information and if you are not an intended recipient, you must not copy, distribute or take any action in reliance on it. If you have received this facsimile in error, please notify us immediately by a collect telephone call to (212) 751-5700 and return the original to the sender by mail. We will reimburse you for postage. Thank you.

**MESSAGE**

Dear Ken:

Attached for your review are final drafts for Lee 22-1 and Lee 23-2. Please provide any comments you may have at your earliest convenience. If everything is in order, please let me so that I can forward Declarations and Assignments to the inventors. Once I receive the executed forms, I will file the applications.

Sincerely,

Chris

**IF YOU HAD ANY TROUBLE RECEIVING THIS TRANSMISSION,  
PLEASE CALL (212) 751-5700 EXT: 3956 IMMEDIATELY.**

[NYC] 305686.1

MAY 28 '99 16:12 FR BAKER &amp; MCKENZIE 212 759 9133 TO 1555341#9190 P.07

**EXHIBIT G**Atty. Docket No.: Lee 22-1  
[56115334/113485]**ASSIGNMENT AND AGREEMENT**

For value received, we, **Chin-Hui Lee**, of Basking Ridge in the County of Somerset and State of New Jersey and **Padma Ramesh**, of New Providence in the County of Union and State of New Jersey, hereby sell, assign and transfer to **Lucent Technologies Inc.**, a corporation of the State of Delaware, having an office at 600 Mountain Avenue, P.O. Box 636, Murray Hill, New Jersey 07974-0636, U.S.A., and its successors, assigns and legal representatives, the entire right, title and interest, for the United States of America, in and to certain inventions related to **KEY SEGMENT SPOTTING IN VOICE MESSAGES** the specification of which is filed herewith as a United States Patent Application, and all the rights and privileges in said application and under any and all Letters Patent that may be granted in the United States for said inventions; and we also concurrently hereby sell, assign and transfer to **Lucent Technologies Inc.** the entire right, title and interest in and to said inventions for all countries foreign to the United States, including all rights of priority arising from the application aforesaid, and all the rights and privileges under any and all forms of protection, including Letters Patent, that may be granted in said countries foreign to the United States for said inventions.

We authorize **Lucent Technologies Inc.** to make application for such protection in its own name and maintain such protection in any and all countries foreign to the United States, and to invoke and claim for any application for patent or other form of protection for said inventions, without further authorization from us, any and all benefits, including the right of priority provided by any and all treaties, conventions, or agreements.

We hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of **Lucent Technologies Inc.** to apply for patent or other form of protection for said inventions and to claim the aforesaid benefit of the right of priority.

We request that any and all patents for said inventions be issued to **Lucent Technologies Inc.** in the United States and in all countries foreign to the United States, or to such nominees as **Lucent Technologies Inc.** may designate.

[NYC] 249932.1

EXPRESS MAIL No. EH 827353286 US  
DATE OF DEPOSIT: JUNE 3, 1999

MAY 28 '99 16:12 FR BAKER &amp; MCKENZIE 212 759 9133 TO 15551155341#9190 P.00

We agree that, when requested, we shall, without charge to Lucent Technologies Inc. but at its expense, sign all papers, and do all acts which may be necessary, desirable or convenient in connection with said applications, patents, or other forms of protection.

Date: 6/1/99

Chin-Hui Lee  
Chin-Hui Lee

United States of America )

State of New Jersey ) ss.:County of Union )

On this 1<sup>st</sup> day of June, 19 99, before me personally came Chin Hui Lee, to me known to be the individual described in and who executed the foregoing instrument, and acknowledged execution of the same.

Anna J. Brazil  
Notary Public

ANNA J. BRAZIL  
Notary Public of New Jersey  
Registered in Union County  
My Commission Expires April 29, 2003

[NYC] 249932.1

MAY 28 '99 16:12 FR BAKER & MCKENZIE 212 759 9133 TO 15541155341#9190 P.09

Padma Ramesh  
Padma Ramesh

Date: 6/1/1999

United States of America )

State of New Jersey ) ss.:

County of Union )

On this 1<sup>st</sup> day of June, 1999, before me personally came Padma Ramesh, to me known to be the individual described in and who executed the foregoing instrument, and acknowledged execution of the same.

Anna J. Brazil  
Notary Public

ANNA J. BRAZIL  
Notary Public of New Jersey  
Registered in Union County  
My Commission Expires April 29, 2003

**RECEIVED**  
**CENTRAL FAX CENTER**

DEC 08 2003

**HITT GAINES, P.C.**  
Intellectual Property Law & Related Matters**FACSIMILE TRANSMISSION****OFFICIAL**

TO: Examiner Gerald Gauthier  
Group Art Unit 2645

FAX NO. (703) 872-9306

FROM: J. Joel Justiss

RE: Serial No. 09/325,143  
Attorney Docket No. C. LEE 22-1

DATE: December 8, 2003

PAGES: 42 (including cover page)

If you do not receive the indicated number of pages, please notify the sender at the telephone number shown below. Thank you.

THE INFORMATION CONTAINED IN THIS FACSIMILE TRANSMISSION IS AN ATTORNEY-CLIENT PRIVILEGED, CONFIDENTIAL COMMUNICATION INTENDED FOR THE EXCLUSIVE USE OF THE INTENDED RECIPIENT NAMED ABOVE. IF YOU ARE NOT THE INTENDED RECIPIENT, OR ARE AN EMPLOYEE OR AGENT RESPONSIBLE FOR DELIVERING THIS TRANSMISSION TO THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION OR COPYING OF THIS TRANSMISSION IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS TRANSMISSION IN ERROR, PLEASE NOTIFY THE SENDER IMMEDIATELY AT THE TELEPHONE NUMBER SHOWN BELOW AND MAIL THE ORIGINAL TRANSMISSION TO THE ADDRESS BELOW. WE WILL REIMBURSE YOU FOR ANY REASONABLE EXPENSE YOU MAY INCUR DOING SO. THANK YOU.

Mailing Address: P.O. Box 832570, Richardson, Texas 75083  
Street Address: 225 University Plaza, 275 West Campbell Road, Richardson, Texas 75080 U.S.A.  
Tel: (972) 480-8800 Fax: (972) 480-8865 firm@abstractassets.com